

FIG. 1

100

1/8

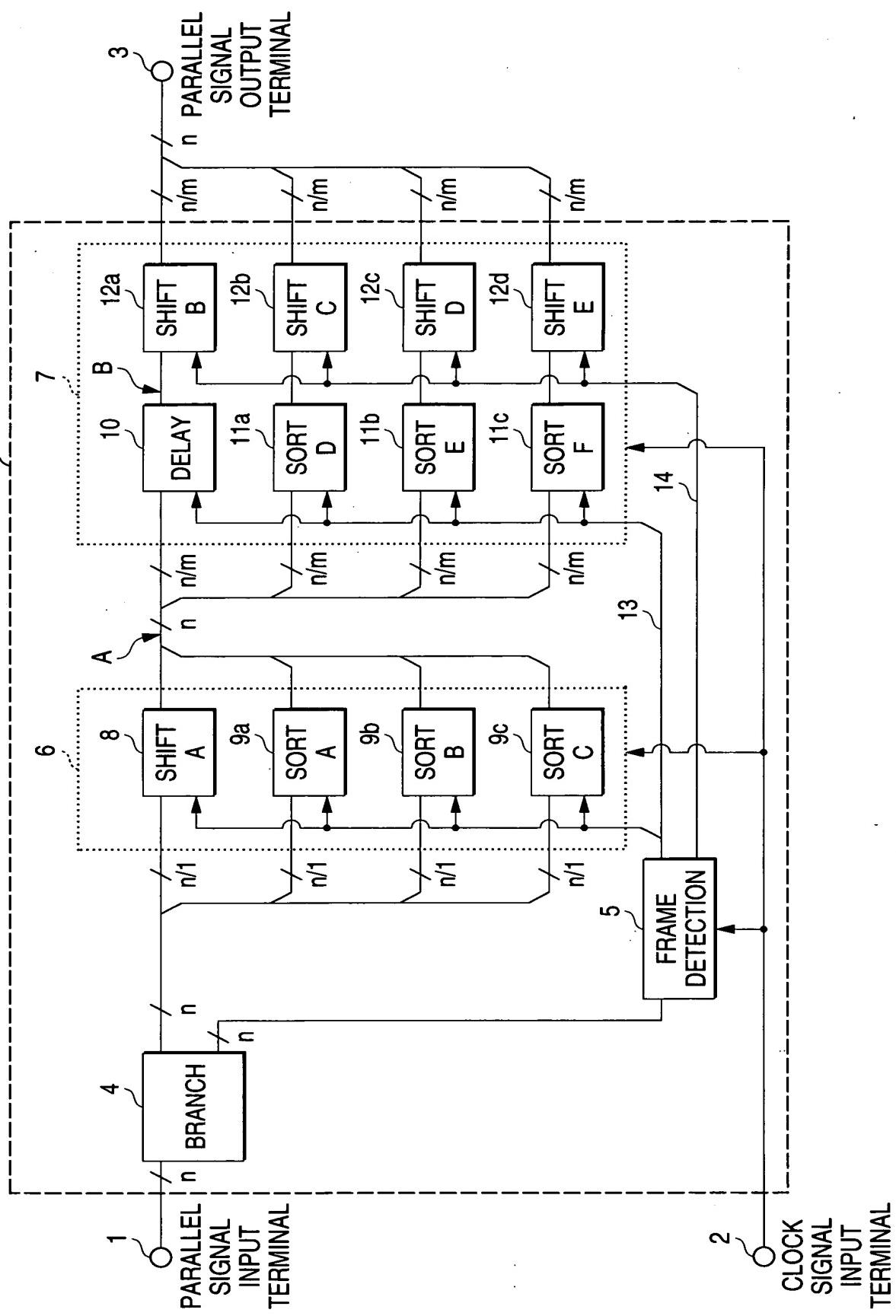


FIG. 2

TRUTH TABLE OF SHIFT CIRCUITS A TO E
(WHERE INPUT OF SORT CIRCUIT AND SHIFT CIRCUIT IS 4 BITS)

INPUT						OUTPUT			
D0	D1	D2	D3	SEL	CLK	Q0	Q1	Q2	Q3
A	B	C	D	0	↑	A	B	C	D
A	B	C	D	1	↑	B	C	D	A (+1)
A	B	C	D	2	↑	C	D	A (+1)	B (+1)
A	B	C	D	3	↑	D	A (+1)	B (+1)	C (+1)

FIG. 3

TRUTH TABLE OF SORT CIRCUITS A TO C
(WHERE INPUT OF SORT CIRCUIT IS 4 BITS)

INPUT						OUTPUT			
D0	D1	D2	D3	SEL	CLK	Q0	Q1	Q2	Q3
A	B	C	D	0	↑	A	B	C	D
A	B	C	D	1	↑	B	C	D	A
A	B	C	D	2	↑	C	D	A	B
A	B	C	D	3	↑	D	A	B	C

FIG. 4

TRUTH TABLE OF SORT CIRCUITS D TO F IN ENABLE
(WHERE INPUT OF 1 BIT SHIFT CIRCUIT IS 4 BITS)

INPUT						OUTPUT			
D0	D1	D2	D3	CLK		Q0	Q1	Q2	Q3
A	B	C	D	↑		B	C	D	A

FIG. 5A

DATA INPUT A		
BIT0	x j (-1) x	
BIT1	x k (-1) x	
BIT2	x l (-1) x	
BIT3	x m (-1) x	
BIT4	x n (-1) x	
BIT5	x o (-1) x	
BIT6	x p (-1) x	
BIT7	x a x	
BIT8	x b x	
	⋮	
BIT14	x h x	
BIT15	x i x	

LOW ORDER
BIT OF FRAME
POSITION SIGNAL

*FIG. 5B*STATE DATA
AT POINT A

x m (-1) x
x j x
x k x
x l x
x m x
x n (-1) x
x o (-1) x
x p (-1) x
x e x
⋮
x g x
x h x

SHIFT A OUTPUT

SORT A OUTPUT

FIG. 6A

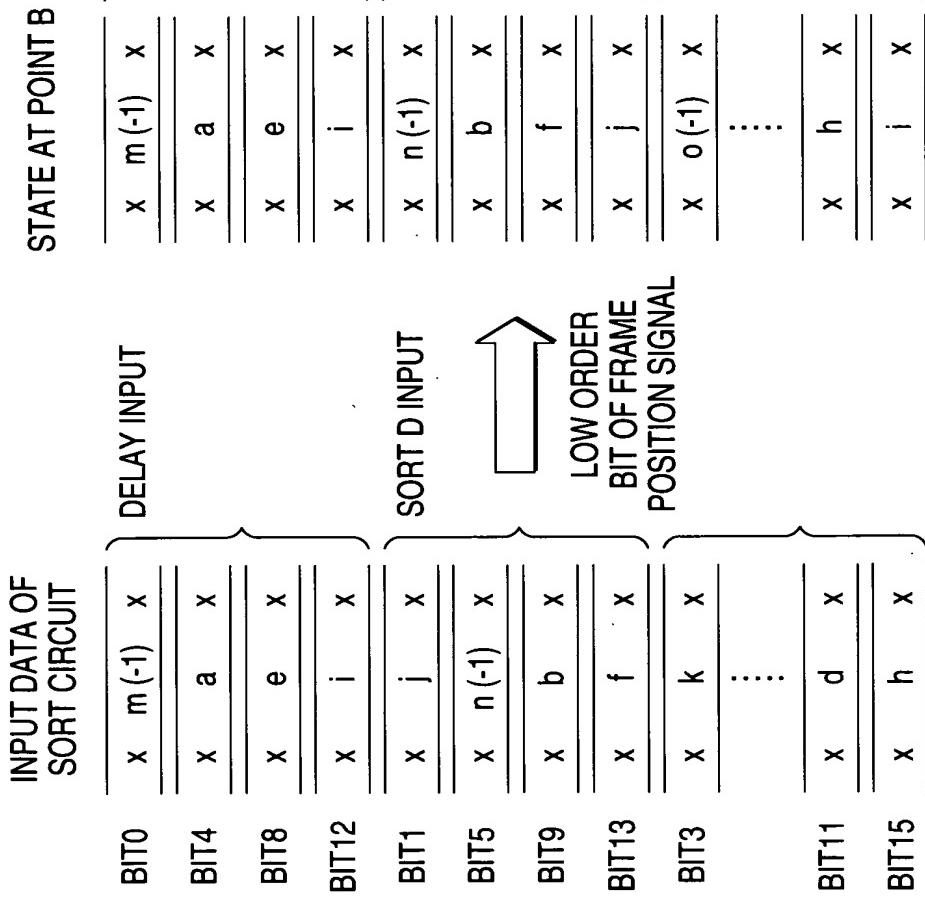


FIG. 6B

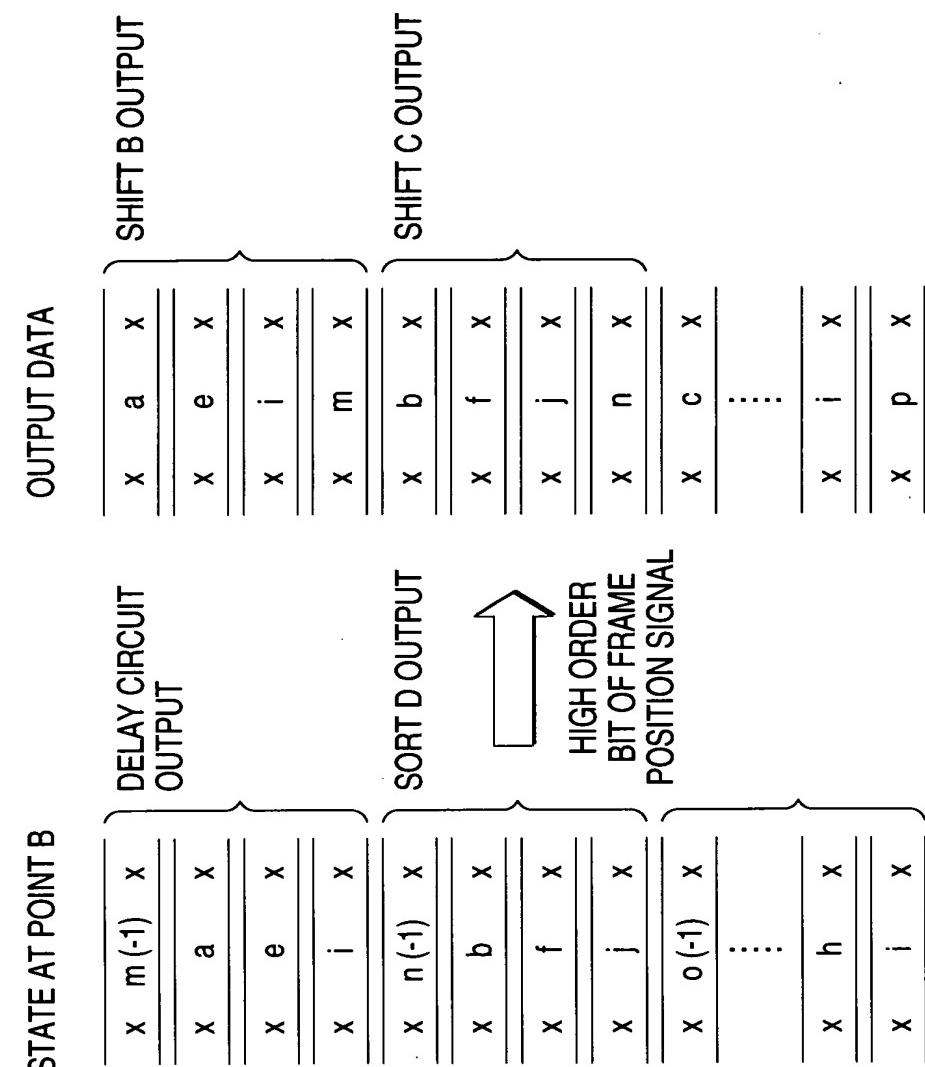


FIG. 6C

4/8

FIG. 7

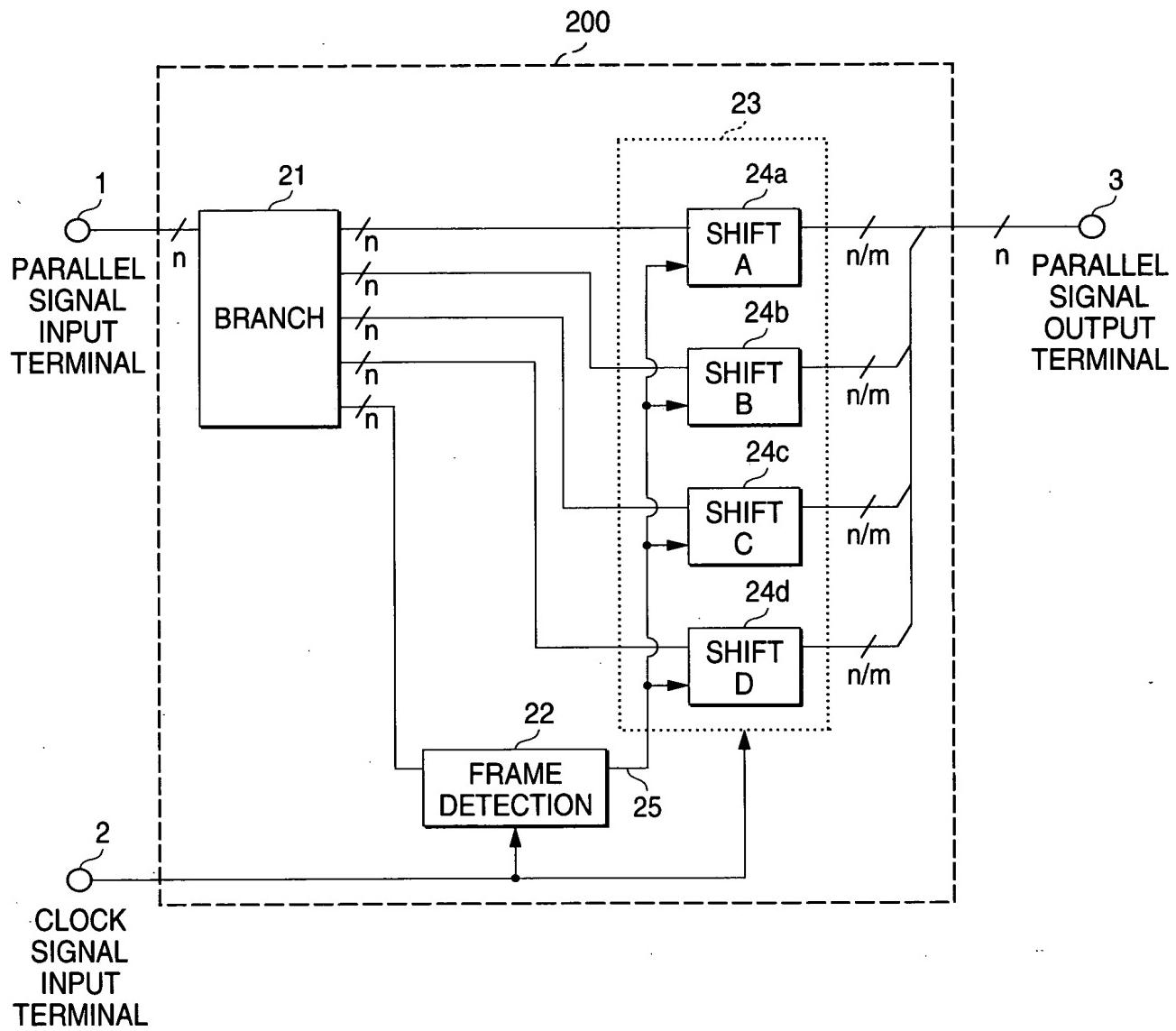


FIG. 8

TRUTH TABLE OF SHIFT CIRCUIT A
(WHERE DATA INPUT IS 16 BITS, AND THERE ARE FOUR SHIFT CIRCUITS)

INPUT							OUTPUT			
D0	D1	D2	...	D15	SEL	CLK	Q0	Q1	Q2	Q3
A	B	C	...	P	0	↑	A	B	C	D
A	B	C	...	P	1	↑	B	C	D	E
A	B	C	...	P	2	↑	C	D	E	F
A	B	C	...	P	...	↑	...	...	...	...
A	B	C	...	P	15	↑	P	A (+1)	B (+1)	C (+1)

FIG. 9

TRUTH TABLE OF SHIFT CIRCUIT B
(WHERE DATA INPUT IS 16 BITS, AND THERE ARE FOUR SHIFT CIRCUITS)

INPUT							OUTPUT			
D0	D1	D2	...	D15	SEL	CLK	Q0	Q1	Q2	Q3
A	B	C	...	P	0	↑	E	F	G	H
A	B	C	...	P	1	↑	F	C	H	I
A	B	C	...	P	2	↑	C	H	I	J
A	B	C	...	P	...	↑	...	...	...	...
A	B	C	...	P	15	↑	D (+1)	E (+1)	F (+1)	G (+1)

FIG. 10A

	DATA INPUT		
BIT0	x	j (-1)	x
BIT1	x	k (-1)	x
BIT2	x	l (-1)	x
BIT3	x	m (-1)	x
BIT4	x	n (-1)	x
BIT5	x	o (-1)	x
BIT6	x	p (-1)	x
BIT7	x	a	x
BIT8	x	b	x
	⋮		
BIT14	x	h	x
BIT15	x	i	x

FRAME
POSITION SIGNAL

FIG. 10B

	DATA OUTPUT		
	x	a	x
	x	b	x
	x	c	x
	x	d	x
	x	e	x
	x	f	x
	x	g	x
	x	h	x
	x	i	x
	⋮		
	x	o	x
	x	p	x

SHIFT A OUTPUT

SHIFT B OUTPUT

FIG. 11

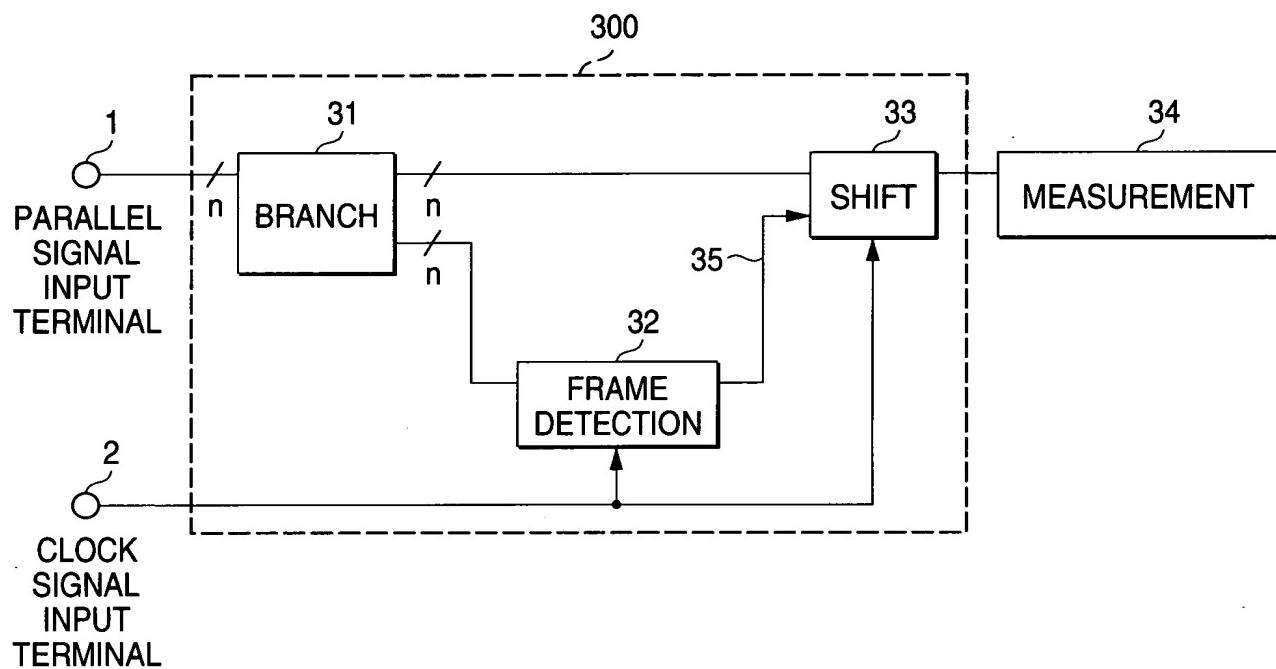


FIG. 12

TRUTH TABLE OF SHIFT CIRCUIT (WHERE DATA INPUT IS 16 BITS)

INPUT							OUTPUT				
D0	D1	D2	...	D15	SEL	CLK	Q0	Q1	Q2	...	Q3
A	B	C	...	P	0	↑	A	B	C	...	P
A	B	C	...	P	1	↑	B	C	D	...	A (+1)
A	B	C	...	P	2	↑	C	D	E	...	B (+1)
A	B	C	...	P	...	↑	...	...	...	...	...
A	B	C	...	P	15	↑	P	A (+1)	B (+1)	...	O (+1)